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A Conceptual Analysis of Request Teaching Procedures for Individuals with Severely Limited Verbal Repertoires

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There have been many published reports of attempts to teach requests to individuals with severely limited verbal repertoires associated with developmental disabilities. Few of these studies used Skinner's (1957) term mand to refer to the behavior taught, yet many seemed to be influenced by Skinner's analysis. We analyzed procedures according to three variables: motivational conditions, supplemental stimulation, and consequences. Individuals with severely limited verbal repertoires provide unique opportunities to study how each of these three variables influence the acquisition of requests. Our analysis indicated that several different procedures were effective in teaching requests, however the degree of supplemental stimulation for the requests varied greatly. Future request teaching programs should consider how each of these three variables influences targeted responses as well as how these variables influence generalization from teaching contexts to nonteaching contexts.

Perhaps the most fundamental function of language is to enlist the help of others in meeting one's needs. Skinner's (1957) analysis of verbal behavior recognized this in its description of the verbal operant class, *mands*. Michael (1988, 1993) commented that language teaching programs for persons with developmental disabilities have neglected mand teaching in favor of other types of verbal behavior. Indeed, a cursory search of the literature might suggest that researchers interested in the verbal behavior of individuals with developmental disabilities had neglected mands. Knapp (1985) suggested examining the literature on *requesting*, however, noting similarities between Jerome Bruner's work describing the development of requesting and Skinner's (1957) treatment of mands. Applying Knapp's suggestion, one notes that there have been many studies describing procedures aimed at establishing requests in persons with developmental disabilities. Although few of these studies have used the term "mand" to describe behaviors taught, many are clearly influenced by Skinner's analysis.

Skinner (1957) defined a mand as a "verbal operant in which the response is reinforced by a characteristic consequence and is therefore under the functional control of relevant conditions of deprivation or aversive stimulation" (p. 36). Skinner's definition of mands may be interpreted as being quite restrictive. His delineation of the defining features of mands, however, along with the rich array of examples he presents, appears to provide a powerful framework for the critical analysis of procedures designed to teach requests.

Our objective here is to use the framework provided by Skinner's analysis of verbal behavior along with supplementary discussions by Michael (1982, 1988, 1993) to analyze procedures used to teach requesting to individuals with severely limited verbal repertoires. Individuals with severely limited verbal repertoires associated with severe or profound mental retardation are important research subjects for theoretical (as well as practical) reasons. We can study the variables controlling initial acquisition of verbal behavior in these

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subjects more easily than in typically developing young children because most young children acquire verbal behavior so rapidly that it is very difficult to trace the development of specific verbal classes. In persons for whom the acquisition process has been severely slowed or arrested, however, we may be able to trace the development of verbal behavior as well as isolate and manipulate the variables controlling that development. As Reese (1991) has stated, "The key to understanding mature behavior is not to look at the mature behavior but to look at its genesis" (p. 158). The analysis presented here should illustrate and advance Skinner's analysis of verbal behavior and should advance our knowledge of the development of mands among persons with severe verbal limitations.

We will analyze procedures designed to teach requests in terms of three primary features. First, we will attempt to identify the motivational condition that might gain control of the response through training. Second, we will attempt to identify sources of supplementary stimulation that also determine the form of the response. Finally, we will discuss whether the response is reinforced by a characteristic consequence. That is, does the response produce a specific reinforcer or a variety of reinforcers.

Motivational Conditions

Although Skinner (1957) formally identifies conditions of deprivation or aversive stimulation as the key sources of antecedent control for mands, it is obvious from the examples given in the chapter on mands that this antecedent control is not limited to unconditioned aversive stimuli or deprivation of primary positive reinforcers. Skinner gave the example of a speaker saying to a listener "What is your name?" The consequence of this mand is the listener saying his or her name. Clearly, Skinner was not implying that the listener's name constituted primary reinforcement.

Michael (1985, 1988, 1993) refined Skinner's definition of the mand by replacing *conditions of deprivation or aversive stimulation* with the concept of *establishing operations*. Establishing operations are variables that momentarily establish the reinforcing effectiveness of some object or event and evoke a set of responses that characteristically are followed by that specific object or event. Primary deprivation or aversive stimulation are, of course, establishing operations, but not all establishing operations involve primary reinforcers or aversive stimulation. Other establishing operations are *conditioned*, that is, they set up the reinforcing value of a stimulus through interactional histories. Michael provides an example in his 1988 paper: Two people are walking down the street. One person sees something, for example, the name of a store that must be written down so it can be effectively related to later. This person then asks the second person for a pencil. Pencils are established as reinforcers in this sequence of events. They are not necessarily reinforcers outside of this context. Michael's examples call attention to the inadequacy of mere deprivation as a means of establishing the reinforcing efficacy of conditioned reinforcers.

It is important to remember that, when the immediate reinforcer for the verbal event is a conditioned reinforcer, the establishing operation functions as part of a larger unit of behavior. As part of the pencil scenario, for example, Michael noted that the pencil was a reinforcer because it allowed the mander to write down a store name or address so that it would not be forgotten. The larger context for this scenario might include calling upon the store at a later date to buy food or clothing. In this example, the terminal maintaining event would be the food or clothing.

It is important to consider the establishing operation for the terminal maintaining event as well as the immediate establishing operation because both are motivational factors. For example, if one is attempting to teach a subject to request a spoon to eat ice cream, it may be important for ice cream deprivation to be a part of the overall controlling condition.

Because the concept of establishing oper-

ation explicitly incorporates mands maintained by conditioned reinforcers and much of human behavior is maintained by conditioned reinforcers, we will adopt that terminology for our analysis. As part of our analysis, we will discuss the extent to which a study has created establishing operations as opposed to taking advantage of existing establishing operations (using assumed reinforcers).

Supplementary Stimulation

In some of the request training procedures, the form of the response is determined by "supplementary stimulation." Skinner introduces such issues in his discussion of multiple causation, noting that the strength of a response is usually the function of more than one variable. He notes, "The tact milk, which is strong in the presence of milk, is more likely to be emitted when the speaker is thirsty for milk." Or, one could say, when a speaker is thirsty, and he sees that milk is available, the mand *milk* is likely to be emitted. A corollary example involving a conditioned reinforcer can be constructed using Michael's (1982) classic slotted screw example. In that scenario, a worker encounters a slotted screw that must be removed to complete a job. This establishes a slotted screwdriver, which the worker does not have, as a reinforcer. He thus asks his assistant to hand him a slotted screwdriver. It is important to remember that the mander only asks for the screwdriver if his assistant, who usually hands him the screwdriver, is there. Consider an altered scenario in which the assistant is not there, but there is a person sitting nearby who is filing his nails. Providing the mander has had previous experience removing screws with a nail file, he is likely to ask for the nail file. In this latter example, the slotted screw established any object that could be used to unscrew it as a reinforcer. The supplementary stimulation provided by the nail file determined the specific response form of the mand.

Characteristic Consequences

The mand is distinguished from other verbal relations in that responses are controlled by establishing operations. This comes about through the reinforcement of a response by a characteristic consequence. Skinner illustrated this notion by noting that a mand often "specifies" its reinforcement, for example, "Bread please." However, Skinner's (1957) discussion of mands is not restricted to responses under the control of a *single* state of deprivation or aversive stimulation. He noted that "Any response used in conjunction with different mands specifying different reinforcement comes under control of different deprivations and acquires certain general properties. *Please* is the best known example. It is strengthened by almost any state of deprivation and is often emitted without any further specification of the behavior of the reinforcer" (p. 41). In reviewing the literature, we noted that several studies taught responses that acquired the general properties of mands as noted by Skinner. We call such responses "nonspecific requests." These nonspecific requests will be distinguished from requests for specific items in our analyses.

THE REQUEST LITERATURE

Our analysis of the request literature showed that the most commonly used procedures involved several different combinations of the characteristics described above. Table 1 shows the characteristics of the most commonly used procedures. We have grouped studies that have characteristics in common.

Nonspecific Requests

Subjects in these studies were taught to make one response when access to a variety of reinforcers was blocked or interrupted. That is, there was not a one to one correspondence between the response form and the consequence. For example, Reichle and colleagues have taught learners to sign "want" or point to a graphic symbol for "want" in order to gain access to an array of reinforcers (Reichle, Barrett, Tetlie, & McQuarter, 1987; Reichle &

Table 1

Variables controlling requests taught to subjects with severely limited verbal repertoires

Variables Controlling Requests Taught to Subjects with Severely Limited Verbal Repertoires

Heading	Motivational Conditions	Supplementary Stimulation	Characteristic Consequences	Articles Referenced
Nonspecific Request Studies	• Assumed	• Visual display of reinforcing consequence • Verbal statements	• Response reinforced by variety of reinforcers	• Reichle, Barrett, Tetlie, & McQuarter, 1987 • Reichle & Brown, 1986 • Reichle, Rogers, & Barrett, 1984 • Hung, 1980
Request for Specific Object	• Assumed or validated with reinforcer preference evaluation	• Visual display of reinforcing consequence	• Response reinforced with specific consequence	• Charlop, Schreibman ,& Thibodeau, 1985 • Gobbi, Cipani, Hudson, & Lapenta-Neudeck, 1986 • Oliver & Halle, 1982 • Reichle & Yoder, 1985 • Romski, Sevcik, & Pate, 1988
Interrupted chain procedure (object *blocked)*	• Establishing operations manipulated	• Visual display of reinforcing consequence • Verbal statements	• Response reinforced with specific consequence	• Alwell, Hunt, Goetz, & Sailor, 1989 • Goetz, Gee, & Sailor, 1985 • Halle, Marshall, & Spradlin, 1979 • Hunt, Goetz, Alwell, & Sailor, 1986
Interrupted chain procedure (object *missing*)	• Establishing operations manipulated	• Items associated with the missing reinforcer	• Response reinforced with specific consequence	• Hall & Sundberg, 1987 • Schussler & Spradlin, 1991 • Sigafoos, Doss, & Reichle, 1989 • Sigafoos, Reichle, Doss, Hall, & Pettitt, 1990
Requests that Replace Disruptive Behaviors	• Establishing operations experimentally validated, then manipulated	• Contextual variables identified through functional analyses	• Response reinforced with a specific consequence	• Carr & Durand, 1985 • Wacker et al., 1990

Brown, 1986; Reichle, Rogers, & Barrett, 1984). An alternate method of nonspecific requesting was taught by Hung (1980). In this study, teachers sequentially held up different food items and asked, "Do you want (object name)?" If the learner said "Yes," he or she was given the object displayed. In these procedures, the reinforcer is not specific to the response (i.e., the same response can produce any of a number of objects). These cases are congruent with Skinner's discussion of mands insofar as a single response could occur under many different deprivation states.

In these nonspecific request studies, the reinforcing efficacy of a stimulus is generally assumed (or perhaps controlled by limiting access to multiple potential reinforcers). For example, a subject may be shown an array of food items under the assumption that one or more of them currently functions as a reinforcer. The establishing operation in this case is food deprivation (presumably, with preferred food items, duration of deprivation need not be great). Food deprivation increases the probability of mands for food. (Similarly, deprivation of other reinforcers would increase the probability of mands for these items.)

The nonspecific request studies also involved supplementary stimulation. The responses were apparently also under the control of the items presented (tact control) and in some cases the verbal statements or questions of the experimenter or teacher (intraverbal control). Typically, a teacher displayed some object or set of objects known to be reinforcers. The teacher may have accompanied this display with a verbal phrase such as, "What do you want?" If the learner emitted an appropriate response, the learner received the object or was allowed access to the set of objects. For example, teachers in a study by Simic and Bucher (1980) presented a bag of potential reinforcers and taught children to say "I want a" and touch the bag. Following this response, any one of the reinforcers in the bag was given to the children. In the Reichle studies, trays of highly preferred items were displayed before the learners. Learners were allowed access to the tray following a specified response.

By definition, nonspecific request studies taught responses that were reinforced by a variety of reinforcers, rather than one specific reinforcer. Nonspecific request training can serve as the first step in teaching an individual to request specific objects, however. For example, the subject of a study by Reichle and Brown (1986) first learned a nonspecific request (touching a want symbol), then learned to label (tact) the objects used as reinforcers during nonspecific request training. Next, the experimenters taught the subject to point to "want" plus the picture of a specific object. The "want + object label" response was presumably motivated by a state of deprivation specific to the requested object, and the response produced a consequence specific to its form.

Requests for Specific Items

Requests have been taught to individuals with severely limited verbal repertoires by limiting access to established reinforcers such as foods or activities. Access to the reinforcers was prevented until a specified response was emitted. For example, Reichle and Yoder (1985) presented trays of potential reinforcers to subjects along with the question, "What do you want?" If the learner reached for an object, he was physically prevented from obtaining the object and prompted to touch a symbol representing that object. Similar procedures were used by Charlop, Schreibman, and Thibodeau (1985); Gobbi, Cipani, Hudson, and Lapenta-Neudeck (1986); and Romski, Sevcik, and Pate (1988). In these studies, reinforcers were displayed, but the subjects were not permitted to access the reinforcers until a specified response was emitted.

In addition to food and other tangible reinforcers, activities involving gross motor movements have also reinforced specific requests. Oliver and Halle (1982) taught a boy to request the continuation of several different gross motor activities. During intervention, the experimenter would stop an ongoing activity such as

pushing the boy on a scooter board, wait 10 seconds, and prompt the boy (if necessary) to use the appropriate manual sign (e.g., *push*) to continue the activity.

In this group of studies, the motivational component was deprivation of the specific reinforcers. Establishing operations were typically not experimentally manipulated. Items displayed to subjects were of known or assumed reinforcing efficacy. Moreover, in some studies, subjects were allowed to reach for an item before being required to emit a verbal response to produce the item. The fact that subjects took and/or consumed the object or food suggests that some deprivation was present. Skinner (1957) suggests that such consumption or taking of the object is evidence that the response is a mand: "Let us say that a child is accustomed to seeing an orange on the breakfast table. When on a given morning the orange is missing, the child says *orange*. Let us suppose that we can show that this is not a mand: for example, suppose we can show that the orange will not be taken or eaten when offered" (p. 101). In this example, taking or eating the offered orange would suggest that the child's utterance *orange* was a mand (and not a tact).

The objects and activities requested were present and visible and thus provided supplemental stimulation in the form of a tact prompt. In addition, statements by the experimenter often supplemented stimulation for targeted responses. For example in the Charlop et al. (1985) study, the experimenter began each trial by presenting a training stimulus and an echoic prompt (modeling the correct response, "I want *object's label.*") (This model was systematically removed with delayed prompt procedures.)

Schussler and Spradlin (1991) taught requests within a snack routine in which a 3-item snack set (e.g., crackers, cheese, and juice) was consistently presented during each snack session. Three subjects were taught via a delayed-prompt technique to request all 3 items, which they then ate. Initially, all three items were visible. After subjects were presented with 17 to 21 sessions with the same set of 3 snack items, test sessions were conducted in which only 2 of the 3 items within a set were visible. Two of 3 subjects requested the missing item during approximately 40% of these test sessions. Skinner (1957) stated that stimuli typically associated with missing objects can strengthen the response which is typically occasioned by that missing object (p. 101).

Each response in these studies was reinforced with a characteristic consequence. For example, in the Charlop et al. study, the response, "I want apple" was always reinforced with an apple and the response, "I want cookie" was always reinforced with a cookie.

Interruption of a Chain

This section reviews studies using a specific teaching procedure, the interrupted chain. Unlike other studies we reviewed, studies in this group established a conditioned reinforcer within the experimental context. In these studies, the reinforcing value of objects was derived from their occurrence within behavior chains leading to a terminal reinforcer. For example, events leading up to eating a bowl of soup include: going to the cupboard and getting a can of soup, opening the can with a can opener, pouring the soup into a pan, heating the soup, pouring the soup in the bowl, getting a spoon, and eating the soup. The spoon is a conditioned reinforcer because of its necessity for eating soup. If a spoon is not immediately available, the soup-eater will likely request a spoon and proceed with the chain leading to soup consumption. The constellation of events that precede receiving the spoon, including a full bowl of soup and food deprivation comprise the establishing operations.

In studies where requests were taught within behavior chains, learners were typically first taught to complete a behavior chain. This chain was composed of several steps, such as preparing food or beverages. These behavior chains end with the consumption of a product that reinforces the previous steps (e.g., eating the prepared food). The behavior chain is next *inter-*

rupted by either blocking access to one of the objects needed to complete the behavior or removing the necessary object before the subject engages in the behavior chain.

Blocking access to a necessary object. A simple method to take advantage of conditioned reinforcers within behavior chains is to momentarily *block* the learner's access to an object needed to complete the chain. In this procedure, the objects to be requested may be visible when the blocking procedures are used, providing supplemental stimulation from these objects. For example, Halle, Marshall, and Spradlin (1979) taught subjects to request meals in a cafeteria setting. The subjects' mealtime routines consisted of sitting at a table, coming to a counter when told by a staff member, picking up a tray, taking the meal back to their table, and eating. The teacher interrupted this chain by blocking access to the cafeteria tray needed to pick up the meal. At the point of interruption, if necessary, the experimenter modeled "Tray please." The model was systematically discontinued using a delayed-prompt procedure. In addition to the interruption procedure, supplementary stimulation was provided by the trays themselves, and the spoken model "Tray please."

Similar strategies were used in studies by Alwell, Hunt, Goetz, and Sailor (1989); Goetz, Gee, and Sailor (1985) and Hunt, Goetz, Alwell, and Sailor (1986). Behavior chains such as getting a drink from the classroom fountain, and pouring juice at snack time were interrupted by blocking access to objects needed to complete the chain. The responses taught varied according to the capabilities of the learner. For example, in the Goetz et al. (1985) study, one subject was taught to point to a line drawing when presented an array of three cards in which two cards were blank. The other learner in this study was taught to get out her communication notebook and point to the picture of the object needed to continue the chain.

Removing objects necessary to complete a chain. In the following studies, an object necessary to complete a chain was removed before the subject started the chain. For example, Sigafoos, Reichle, Doss, Hall, and Pettitt (1990) removed a spoon in a soup making and eating chain and then, at the point in the chain requiring a spoon, the teacher prompted subjects to request a spoon. The spoon was a conditioned reinforcer because of its necessity to completing the behavior chain. Similar techniques were used by Hall and Sundberg (1987) and Sigafoos, Doss, and Reichle (1989) to teach adults to request objects such as utensils needed to complete food preparation routines.

In these studies where conditioned reinforcers were removed from behavior chains, supplementary stimulation may have been provided by the presence of other items associated with the conditioned reinforcer. As shown in the Schussler and Spradlin (1991) study, objects historically associated with a missing object may exert supplementary control over a request for the missing object.

Studies reviewed in this section demonstrated how interrupting behavior chains and limiting access to reinforcers have been used in teaching requests to individuals with severely limited verbal repertoires. These examples illustrate how everyday events can become powerful teaching contexts. One advantage of the interrupted chain method of teaching requests is that chains of behavior the learner completes as part of a daily routine can be exploited for teaching. This eliminates the need to teach in one context and then teach the learner to emit the behavior in a different context.

The responses taught in these interrupted chain studies were reinforced with a characteristic consequence. That is, when the soup making routine was interrupted, a targeted response such as a specified manual sign was consistently reinforced with a spoon. Similarly, selecting targeted pictures in the Goetz et al. (1985) study was reinforced with the objects that subjects were blocked from accessing.

Requests That Replace Disruptive Behaviors

Some recent experiments aimed at reducing disruptive behaviors provide additional examples of teaching requests to

individuals with severely limited verbal repertoires. These experiments have attempted to decrease self-injury, stereotypy, and aggression by teaching a functionally equivalent alternative response (e.g., Carr & Durand, 1985; Wacker et al., 1990). A central hypothesis for these studies is that the disruptive behaviors have been reinforced by characteristic consequences (such as the removal of an aversive stimulus) and that teaching an alternative behavior that produces the same consequences will decrease the disruptive behavior. In many cases, both the disruptive behavior and its alternative have the characteristics of a mand.

The following studies all used *functional assessments* to determine the variables controlling the disruptive behaviors. Functional assessments obtain information from interviews, direct observation of individuals in specific contexts, and manipulation of antecedents and consequences. The observational contexts are often constructed by the experimenter to see whether the targeted behavior occurs predictably under certain conditions. For example, if the subject's disruptive behaviors escalate when the subject is presented with a difficult task, the behavior may be functioning to escape from or avoid an aversive situation.

These studies illustrate how antecedent and consequent variables can be manipulated to determine what establishing operations are evoking and maintaining a behavior (whether it is disruptive or not), and to teach new requests. For example, Carr and Durand (1985) conducted a functional assessment and found that two subjects' disruptive behaviors increased in difficult task situations. These subjects were taught to request assistance when presented a difficult task. A third subject's disruptive behaviors increased when staff attention was low. This subject was taught to request attention (e.g., "Am I doing good work?"). The results showed a dramatic decrease in the disruptive behaviors in the treatment conditions. Wacker et al. (1990) studied disruptive behaviors in three subjects who did not speak. An assessment conducted by the experimenters indicated that one of the subject's disruptive behaviors was maintained by a specific reinforcer (a yellow bowl). In the treatment condition, this subject was taught to touch his chin to request this yellow bowl. The disruptive behaviors decreased during the treatment condition.

SUMMARY AND CONCLUSIONS

We have reviewed five groups of studies that taught requests to individuals with severely limited verbal repertoires: Studies of: (1) nonspecific requests, (2) requests for specific objects, (3) behavior chains interrupted by blocking access to an object, (4) behavior chains interrupted by removing an object, and (5) requests that replaced disruptive behaviors. Each group of studies was reviewed in terms of three different variables: motivational conditions, supplementary stimulation, and characteristic consequences. Table 1 summarizes this analysis.

The studies reviewed here illustrated some useful procedures for teaching requests. Nonspecific request studies demonstrated how to teach an individual to request many different reinforcers with one response. The combination of a nonspecific request with an object label can further serve to tell the listener that a speaker is requesting, versus tacting (discussed as an autoclitic function by Skinner).

Several different methods of teaching specific requests were reviewed. The interrupted chain procedures have several advantages over other methods. Of the two methods of interrupting behavior chains discussed, it seems that removing an object (rather than simply blocking access to a visible object) may be preferable. The responses taught with the missing object method are more likely to be primarily a function of the establishing operation. In contrast, the responses taught when the requested objects are present are likely to be controlled by the establishing operation used to teach the response in addition to the presence of the object that the subject is requesting. In such cases, the response may not be emitted when the supplementary stimulation is not present. The practical

implication of this is that requests taught with missing objects may be more similar to the nonteaching situations in which requests are functional. That is, subjects are likely to encounter future situations where a specific object is missing. Moreover, if the object is not missing, a simple pointing response may suffice to obtain the object.

Further research is needed to determine if variations in these teaching methods facilitate learning. For example, the point of interruption in an interrupted chain procedure may be critical. Interrupting a chain at a point close to the terminal reinforcer may take advantage of a more powerful establishing operation than interrupting the chain early on. Learners may be more motivated to request objects that are closely associated with consuming the final product. For example, they may be more motivated to mand a spoon than a can opener in a soup making and eating routine.

Other areas for further research were indicated by the analyses of requests that replaced disruptive behaviors. A functional analysis was effective in defining establishing operations for current requests that may be disruptive or harmful. Combining the technology of functional analysis with what has been learned about manipulating establishing operations should yield powerful procedures for teaching practical requests. These procedures could start by using a functional analysis approach to determine appropriate contexts for an individual to learn to request. Once such a context is identified, the interventionist could adapt existing establishing operations using one of the interrupted chain methods.

One of the key features of our analysis of request teaching procedures is the attempt to specify additional sources of control for verbal behavior. Skinner called these additional sources *supplementary stimulation*. In almost every case, the behaviors taught involved supplementary stimulus control that could be considered tact-like, intraverbal-like, or echoic control.

According to Skinner, it is not surprising that multiple controls determined the verbal responses taught in these studies. He begins his chapter on multiple causation by stating that: "(1) the strength of a single response may be, and usually is, a function of more than one variable, and (2) a single variable usually affects more than one response" (Skinner, 1957, p. 227). Thus, Michael's statements that mand relations have been neglected in traditional language training is true in the sense that few studies have taught *pure mands* (e.g., verbal responses controlled only by deprivation, aversive stimulation, or other establishing operations). However, as Skinner's statement about the controlling variables for verbal behavior points out, pure mands rarely occur. It may even be impossible to create teaching contexts where only the controlling variables associated with mands are in effect.

Skinner's and Michael's analyses provide examples of how to identify the multiple sources of control for verbal behaviors and suggest possible goals in teaching requests to this population. For example, responses that are emitted without tact or echoic prompts should enable individuals to obtain objects or events whenever they were deprived of them (given a willing listener). Responses that are jointly controlled by the presence of objects, verbal statements, and particular audiences are more limited to the immediate teaching context. Thus, a reasonable therapeutic goal would be to ensure that requests taught are controlled primarily by conditioned or unconditioned establishing operations while documenting the supplemental stimulation provided by a specific requesting context.

Another area for future research will be to determine how a request established under the control of one establishing operation might transfer to another establishing operation. For example, if we teach a subject to mand a spoon in the context of one establishing operation, is that response likely to generalize to other establishing operations for spoon? If not, what programming steps are necessary to accomplish this transfer?

Studies involving individuals with severely limited verbal repertoires provide a unique opportunity to learn about mands

and the relationship of mands to other verbal operant classes. These analyses suggest that we can learn a great deal about the initial acquisition of mands that cannot be learned merely by observing normal development. We have been able to isolate many of the critical variables that would no-doubt go undetected in the fast-paced world of normal development.

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